

REMARKS/ARGUMENTS

Claims 1-5, 7 and 9-12 remain in this application.

Claim 11 has been amended to correct an obvious typographical error.

In response to the Office Action of August 3, 2006, Applicant requests re-examination and reconsideration of this application for patent pursuant to 35 U.S.C. 132.

Rejection under 35 USC 103(a)

Claims 1, 9 and 10 stand rejected under 35 U.S.C. 103(a) as unpatentable over Robbins in view of Jensen.

The Examiner alleges that Robbins shows a pressurized wheel hub 21 for a trailer including bearings 22 and 23 rotatably secured on an axle 24. Seals 30 and 39 are located between the hub 21 and the axle 24 to form a closed air space around the bearings. Robbins discloses a pneumatic chamber 36 coaxially disposed around the axle 24. An inlet 19 fluidly couples a source of pressurized air 17 to an outlet 37 coupled to the closed air space. While Robbins does not disclose that the closed air space is maintained at a pressure between 1 and 30 psi, the Examiner alleges that it would have been obvious to one of ordinary skill in the art to maintain this pressure to prevent undue temperature rises within the closed air space which could damage the seals and also to prevent contaminants and/or water from entering the closed air space.

The Examiner admits that Robbins fails to disclose the pneumatic chamber being disposed within the axle and relies on Jensen to supply this teaching. The Examiner concludes that it would have been obvious to provide Robbins with a hollow axle having a pneumatic chamber therein for the purpose of reducing the number of parts

of the assembly and to protect air inlets and outlets from damage by enclosing them within the axle.

Robbins discloses providing an axle 24 with a space 36 surrounding the axle into which air is supplied from a compressor. The air is supplied at a sufficient rate to prevent water or other contaminants from entering into the cavity 36 through the small gap between the flange 35 and the inner flange 28 (column 3, lines 44-62). Robbins also disclosed a grease seal 39 located between the space 36 and the bearing 23. The stated purpose of seal 39 is "to seal grease in and around the bearings." There is no indication in the disclosure of Robbins that seal 39 allows the passage of air from cavity 36 to the space between bearings 22 and 23. Since pressurized cavity 36 prevents water from entering the wheel hub and reaching the bearings there would be no reason to supply the space between the bearings 22 and 23 with pressurized air to protect the bearings from water damage.

Robbins therefore teaches away from providing pressurized air to the space between the bearings of a wheel to prevent water from entering this space.

Jensen discloses a tire inflation system for trailers wherein pressurized air is supplied through an axle 11 and into chamber 25 located at the end of the axle. Chamber 25 is connected to the interior of the vehicle's tire through passage 28 so that air supplied to chamber 25 will pressurize the vehicle's tire (col. 5,

lines 8-17). A seal 15 is provided on a seal carrier 14 positioned between the end of the axle and the hub to prevent the leakage of air in the inboard direction toward the bearings and the space between the bearings (column 4, lines 62-68). Therefore, Jensen teaches away from providing pressurized air to the space around the bearings. In addition, there is no teaching in Jensen to provide seals around the bearings to form a closed air space around the bearings and providing pressurized air to the closed air space.

If the proposed modification of Robbins were made, the result would be an axle with an air passgeway through the center thereof which supplies air to the vehicle tires for inflation purposes. None of the air would be supplied to the closed air space surrounding the wheel bearings and seals. This proposed axle and hub assembly would not prevent the entry of water into the hub and the space surrounding the bearings as the instant invention does.

The Examiner has also not established a suggestion or motivation why the Robbins should be modified. "To establish a prima facie case of obviousness...there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." (MPEP 2134). Robbins prevents water from entering the wheel hub by providing a pressurized cavity 36 at one end of the hub. There would be no purpose served by providing an air passageway through the axle and

pressurizing the outer end of the wheel hub only, as taught by Jensen. This would not prevent water from entering the wheel hub through passageway 28 and contacting the wheel bearings. "The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure." *In re Vaeck*, F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991).

Applicant submits that the foregoing demonstrates that the combination of Robbins and Jensen fail to disclose Applicant's invention as claimed in claims 1, 9 and 10. Applicant further submits that the Examiner's rejection of claims 1, 9 and 10 as unpatentable over Robbins in view of Jensen is obviated in light of the foregoing remarks.

Claims 2-5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Jensen as applied to claims 1 and 9-10, and further in view of Hunt et al.

The Examiner contends that Robbins as modified by Jensen discusses a control unit for the air compressor 17 (see column 4, lines 12-17), which would imply a means for measuring the air pressure in the system, but does not specifically state the presence of such a means.

Hunt et al. teaches the use of a pressure gauge 40 includes a dial face 106 and pressure-indicating needle 104 moving relative to the dial face 106 in direct relation to the air pressure within the closed system. The dial face may be color coded to indicate safe operation of the hub. The pressure gauge would be fluidly coupled to a closed air space.

Therefore from this teaching, the Examiner concludes that it would have been obvious to provide the system of Robbins as modified by Jensen with a pressure gage as taught by Hunt et al. for the purpose of providing a simple and easy way of visually determining the air pressure within the closed space.

The control of the air compressor, discussed at column 4, lines 12-17 of Robbins, is a simple on-off control of the air compressor whenever problem conditions are contemplated, such as immersion of the trailer into water for launching or loading a boat. There is no mention in Robbins of measuring the pressure within the wheel hub or any other portion of the system.

Since the proposed modification of Robbins by Jensen does not result in a structure which supplies pressurized air to the air space around the bearings and seals there would be no reason to measure the pressure in this area. Therefore, there would be no reason to modify Robbins by providing a pressure gauge to measure the air pressure in the space around the bearings and seals. "The teachings or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure." *In re Vaeck*, F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991).

Applicant submits that the foregoing demonstrates that the combination of Robbins, Jensen and Hunt et al. fail to disclose Applicant's invention as claimed in claims 2-5. Applicant further submits that the Examiner's rejection of claims 2-5 as

unpatentable over Robbins in view of Jensen and further in view of Hunt et al. are obviated in light of the foregoing remarks.

Claims 7 and 11-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Jensen and in further view of Hunt et al. as applied to claims 2-5 above, and further in view of Pendleton.

The Examiner alleges that Robbins as modified by Jensen and Hunt et al. does not show the air pressure gauge being fluidly coupled to the closed air space, nor the use of a polished sleeve with the seals.

The Examiner states that Pendleton teaches the use of a pressurized wheel hub 10 including bearings (15-16) that are rotatably securable to an axle 13, and seals 21 (and hub cap 18, which acts as a seal) mounted between the hub 10 and axle 13. The seals (21 & 18) form a closed air space around the bearings (15-16) to form an annular pneumatic chamber coaxially disposed on the axle 13. Also included is a means for measuring the amount of pressurized air within the closed air space (namely air valve 20). It is well known in the art that air pressure gauges may be attached to an air valve (such as the air valve 20 shown in Pendleton) in order to measure the air pressure within a closed air space to which the valve is connected in order to determine whether or not the proper pressure is maintained or present within the closed air space. Therefore from these teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the hubcap 16 of Robbins (as modified by Jensen and Hunt et al) for the purpose of allowing an operator access to the closed air space (by attaching the air pressure gauge as taught by Hunt et al) in order to be able to easily read the pressure of the air within the closed air space (in

order to determine proper functioning of the seals, etc.), dependent upon cost and availability.

The Examiner further alleges that Pendleton teaches the use of a sleeve 23 operatively associated with a seal 21, which is securable to the axle 13 (through other elements of the seal 21). This sleeve 23 is not disclosed as being a polished sleeve having a machined surface to permit enhanced sealing. The Examiner takes Official Notice that it is well known in the art that metal sleeves to be used in conjunction with a seal member require a sufficiently smooth, or machined surface, that is free of burrs or other imperfections in order to properly form an airtight seal with the seal member. It is well known that burrs or other imperfections present on the surface of the sleeve would not only prevent the seal member from seating properly against the surface of the sleeve (thus allowing the seal assembly to leak), but could also cause undue damage to the seal member during installation (thus possibly causing premature failure during use and/or allow fluid to seep past the seal). It is further well known in the art that a polished (or machined) surface on an element increases the usable surface area of that element. In the instant case, a sleeve having a polished or machined surface would have a greater surface area (by reducing the amount of surface imperfections and/or variance) to mate with an elastomeric seal, thus allowing the formation of an airtight and fluid-tight connection between the seal and sleeve.

Therefore, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the sleeve 23 of Pendleton with a polished machined surface in order to prevent undue damage to the seal member (31 & 35), thus preventing premature failure of the seal during use.

The Examiner also concludes from these teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the assembly of

Robbins as modified by Jensen and Hunt et al. with a seal having a polished sleeve as a substitution of equivalent seals, for the purpose of preventing loss of fluid and/or air pressure from the hub assembly, dependent upon cost and availability.

The Examiner's conclusion that Pendleton discloses a means to measure the amount of pressurized air within the closed air space, in a wheel hub, by the air valve 20 is without basis. The purpose of the air valve 20 of Pendleton is solely for the introduction of air into the hub as stated in column 1, lines 63-66. The existence of positive air pressure in the hub of Pendleton is measured by the flexing of the lip 26 outwardly (column 2, lines 13-17). Therefore there would be no reason to attach an air pressure gauge to air valve 20. The only suggestion to make this modification is found in Applicant's disclosure and is therefore improper, *In re Vaeck*, 947, F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991).

The Examiner has take Official Notice that it is well known in the art that metal sleeves to be used in conjunction with a seal member require a sufficiently smooth, or machined surface, that is free of burrs or other imperfections in order to properly form an airtight seal with the seal member. While the Examiner has set forth his reasoning for taking Official Notice he has not established that the notice of the facts beyond the record must be "capable of such instant and unquestionable demonstration as to defy dispute" as required by the court in *In*

re Ahlert, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970). Applicant again respectfully requests that the Examiner cite prior art references or provide other evidence to support these statements.

The Examiner has failed to establish a *prima facie* case of obviousness since all the claimed limitations have not been taught or suggested by the prior art as required in *In re Royka*, 490 F.2d 981, 180 USPQ 580, (CCPA 1974). An air pressure gauge fluidly coupled to the closed air space formed by seals around the wheel bearings and a polished sleeve securable to the axle and operatively associated with the seals, the sleeve providing a machined surface to permit enhanced sealing have not been taught or suggested by the prior art, Robbins, Jensen, Hunt et al. and Pendleton.

Applicant submits that the foregoing demonstrates that the combination of Robbins, Jensen, Hunt et al. and Pendleton fails to disclose Applicant's invention as recited in claims 7, 11 and 12. Applicant submits that the Examiner's rejection of claims 7, 11 and 12 based on the combination of Robbins, Jensen, Hunt et al. and Pendleton are therefore obviated in light of the foregoing remarks.


Because the proposed combinations of references fail to show that which Applicant now claims as his invention, it is respectfully submitted that the Examiner's *prima facie* case of

obviousness has been persuasively rebutted. Reconsideration and withdrawal of the Examiner's rejections under 35 USC 103(a) and allowance of the claims is respectfully requested.

SUMMARY

In light of the foregoing remarks and amendment to the claims, it is respectfully submitted that the Examiner will now find the claims of the application allowable. Favorable reconsideration of the application is courteously requested.

Respectfully submitted,


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